

IN THE CLAIMS:

The following listing of the claims replaces all earlier listings and all earlier versions.

1.-2. (Cancelled)

3. (Previously presented) An edible product made by the method of claim 33, wherein the edible substrate is confectionery.

4. (Previously presented) An edible product made by the method of claim 33, wherein the edible substrate is a confectionery piece having a non-planar hydrophobic surface.

5. (Original) The edible product according to claim 4, wherein the hydrophobic surface is a sugar shell polished with wax or fat.

6. (Cancelled)

7. (Currently Amended) A fat or wax-based ink-jettable edible ink for printing on an edible substrate, comprising:

at least 0.09 percent by weight of a water-soluble FD&C dye colorant;

a fat or wax dispersible carrier for the colorant in an amount effective to dissolve the colorant; and

a fat or wax base, wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base;

wherein the ink has a viscosity in a range of about 5 centipoise to about 20 centipoise and a surface tension of less than about 50 dynes per centimeter at the conditions under which the ink is ejected from a piezoejet printhead.

8. (Previously presented) The edible ink according to claim 7, wherein the carrier comprises a polyol.

9. (Cancelled)

10. (Previously presented) The edible ink according to claim 7, wherein the fat or wax base is selected from the group consisting of candelilla wax, carnauba wax, beeswax, hydrogenated vegetable fats, milk fat, cocoa butter, edible fractions of mono-, di- and triglycerides, and vegetable oil and mixtures thereof, present in a range of about 30 percent by weight to about 80 percent by weight.

11. (Previously presented) The edible ink according to claim 7, comprising a carnauba wax base, present in a range of about 30 percent by weight to about 80 percent by weight.

12. (Previously presented) The edible ink according to claim 7, further comprising at least one component selected from the group consisting of surfactants, stabilizers, preservatives, antioxidants, anti-bloom agents, micronutrients, and proteinaceous materials.

13.-14. (Cancelled)

15. (Previously presented) The edible ink according to claim 7, wherein the colorant is an FD&C dye present at about the solubility limit of the FD&C dye in the carrier.

16. (Currently Amended) A fat or wax-based ink-jettable edible ink for printing on an edible substrate, comprising:

at least 0.09 percent by weight of a water-soluble FD&C dye colorant;

a fat or wax dispersible carrier for the colorant in an amount effective to dissolve the colorant; and

a fat or wax base, wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base;

wherein the ink makes a contact angle of less than about 50 degrees with a wax-polished confectionery surface at the conditions under which the ink is applied to the edible substrate.

17. (Previously Presented) The edible ink of claim 7, wherein the ink is solid at 20° C and upon heating to a temperature in a range of about 63° C to about 180° C obtains a viscosity of about 10 centipoise to about 15 centipoise such that the ink is ejectable through a piezojet ink-jet printhead.

18. (Cancelled)

19. (Previously Presented) The edible ink of claim 7, wherein the ink makes a contact angle of less than about 50 degrees with a wax polished hydrophobic confectionery surface at the conditions under which the ink is applied to the edible substrate.

20. (Currently Amended) A method of ink-jet printing on edible substrates comprising the steps of:

positioning an edible substrate proximate a piezojet ink-jet printhead having at least one ink reservoir;
supplying to said ink reservoir an edible ink comprising: at least about 0.09 percent by weight of a water-soluble FD&C dye colorant; a fat or wax dispersible carrier for the colorant in an amount effective to dissolve the colorant; and a fat or wax base; wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base;

selecting the carrier for the colorant and the fat or wax so that the ink has a viscosity in a range of about 5 centipoise to about 20 centipoise and a surface

tension of less than about 50 dynes per centimeter at the conditions under which the ink is ejected from the piezojet printhead; and

ejecting droplets of the edible ink from the piezojet printhead onto a surface of the edible substrate in accordance with data signals to form an image having a resolution greater than 100 dpi and comprising individual solidified droplets of the ink.

21. (Cancelled)

22. (Previously Presented) The method according to claim 20, wherein the edible ink is ejected from the piezojet ink-jet printhead at a temperature in a range of about 63° C to about 180° C.

23. (Original) The method according to claim 20, wherein the ink forms a contact angle of less than about 50 degrees on the edible substrate.

24. (Cancelled)

25. (Original) The method according to claim 20, wherein the edible substrate is confectionery.

26.-27. (Cancelled)

28. (Original) The method according to claim 20, comprising the step of positioning the piezojet ink-jet printhead at an angle with respect to a moving direction of the edible substrate, and providing image data to the piezojet ink-jet printhead to compensate for the angle made by the printhead with respect to the moving direction of the edible substrate, such that image resolution is enhanced.

29. (Previously presented) The method according to claim 20, comprising the step of heating the ink in the ink jet printhead to obtain a viscosity in the range of about 7 centipoise to about 15 centipoise and a surface tension below about 50 dynes/cm such that droplets of the ink can be ejected to form a high resolution image on the edible substrate.

30. (Original) The method according to claim 20, wherein the step of positioning the edible piece comprises:

providing a conveyor having multiple pockets sized to accept a confectionery piece,

fixing the position of the pieces in the pockets with vacuum or a trapping member, and

serially transporting the confectionery pieces past a piezojet ink jet printhead.

31.-32. (Cancelled)

33. (Previously Presented) The method according to claim 20, wherein the image is formed having a resolution greater than 150 dpi.

34. (Previously Presented) The method according to claim 20, wherein the image is formed having a resolution of about 300 dpi to about 800 dpi.

35.- 36. (Cancelled)

37. (Currently Amended) An edible product comprising:
an edible substrate selected from the group consisting of confectionery, baked goods, biscuits, cakes, cookies, nuts, chocolates, cheeses, crackers, chips, pastries, puddings, mousses, ice creams, creams, pet foods, pet treats, main meal snacks, cereals, and pharmaceutical tablets, and
an ink-jetted image on the substrate having a resolution of greater than 300 dpi and comprising individual droplets of solidified edible ink; and wherein at least one of said individual droplets comprises a fat or wax-based edible ink-jettable ink which comprises at least about 0.09 percent by weight of a water-soluble FD&C dye colorant, a fat or wax dispersible carrier for the colorant in an amount effective to dissolve the colorant, and a fat or wax base, wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base.

38. (Currently Amended) A fat or wax-based ink-jettable edible ink for printing on an edible substrate, comprising:

at least about 0.09 percent by weight of a water-soluble FD&C dye colorant;

a fat or wax dispersible carrier for the colorant comprising glycerol, propylene glycol or a mixture thereof in an amount effective to dissolve the colorant; and

a fat or wax base, wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base.

39. (Currently Amended) A fat or wax-based ink-jettable edible ink for printing on an edible substrate, comprising:

at least about 0.09 percent by weight of a water-soluble FD&C dye colorant;

a fat or wax dispersible carrier for the colorant in an amount effective to dissolve the colorant; and

a fat or wax base, wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base;

wherein the ink has a surface tension below about 50 dynes/cm at the conditions under which the ink is ejected from the printhead.

40. (Currently Amended) A method of ink jet printing on edible substrates comprising the steps of:

positioning an edible substrate proximate a piezoojet ink-jet printhead having at least one ink reservoir;

supplying to said ink reservoir an edible ink comprising: at least about 0.09 percent by weight of a water-soluble FD&C dye colorant, a fat or wax dispersible carrier for the colorant in an amount effective to dissolve the colorant, and a fat or wax base; wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base; and

ejecting droplets of the edible ink from a piezoflow printhead onto a surface of the edible substrate in accordance with data signals to form an image having a resolution greater than 300 dpi and comprising individual solidified droplets of the ink.

41. (Currently Amended) A method of ink-jet printing on edible substrates comprising the steps of:

positioning lenticular shaped confectionery pieces having a hydrophobic polished sugar shell coating with a non-planar surface in individual pockets on a conveyor and serially conveying the pieces past a stationary piezoflow ink-jet printhead having at least one ink reservoir;

supplying to said ink reservoir an edible ink comprising: at least about 0.09 percent by weight of a water-soluble FD&C dye colorant, a fat or wax dispersible carrier for the colorant in an amount effective to dissolve the colorant, and a fat or wax base; wherein the colorant is dissolved in the carrier prior to addition of the carrier to the fat or wax base; and

ejecting droplets of the edible ink from a piezoflow printhead onto a surface of the edible substrate in accordance with data signals to form an image having a resolution greater than 100 dpi and comprising individual solidified droplets of the ink.